ELSEVIER

AVAILABLE AT
www.ElsevierComputerScience.com
POWERED BY SCIENCE DIRECT®

Neural Networks 16 (2003) III–XII

Neural Networks

www.elsevier.com/locate/neunet

Contents Volume 16, 2003

NEURAL NETWORKS

Volume 16, Number 1 January 2003

CONTENTS

Editorial

S. Grossberg, M. Kawato, J. G. Taylor — 1 — Celebrating the Year with a Special Issue for IJCNN'03

Neural Networks Referees

3 — Neural Networks Referees Used in 2002

Neural Networks Letter

N. Schweighofer, K. Doya — 5 — Meta-learning in Reinforcement Learning

Psychology and Cognitive Science

J. Tani — 11 — Learning to generate articulated behavior through the bottom-up and the top-down interaction processes

O. Watanabe, M. Idesawa — 25 — Computational model for neural representation of multiple disparities

Neuroscience and Neuropsychology

K. Ikeda — 39 — A synfire chain in layered coincidence detectors with random synaptic delays

Mathematical and Computational Analysis

T. Yamazaki — 47 — Mathematical analysis of a correlation-based model for orientation map formation

H. Tsukimoto, H. Hatano — 55 — The functional localization of neural networks using genetic algorithms

M. Lázaro, I. Santamaría, C. Pantaleón — 69 — A new EM-based training algorithm for RBF networks

M. Burger, A. Neubauer — 79 — Analysis of Tikhonov regularization for function approximation by neural networks

G. G. Lockwood, I. Aleksander — 91 — Predicting the behaviour of G-RAM networks

Engineering and Design

I. Gabrijel, A. Dobnikar — 101 — On-line identification and reconstruction of finite automata with generalized recurrent neural networks

doi:10.1016/S0893-6080(03)00281-8

Technology and Applications

S.-K. Lee, P.-c. Chung, C.-I Chang, C.-S. Lo, T. Lee, G.-C. Hsu, C.-W. Yang 121 Classification of clustered microcalcifications using a Shape Cognitron neural network

K. A. Nagaty 133 On learning to estimate the block directional image of a fingerprint using a hierarchical neural network

Book reviews

F. Azuaje 145 Self-organizing Neural Networks: Recent Advances and Applications: Studies in Fuzziness and Soft Computing; U. Seiffert, L.C. Jain (Eds.); Physica-Verlag, Heidelberg, 2002, hardbound, ISBN 3-7908-1417-2

Erratum

R. Williamson 147 Erratum to Book review: Learning Kernel Classifiers (MIT Press, 2002, ISBN: 0-262-08306-X, $40) [Neural Networks 15(7) 930]

149 *Current Events*

I INNS / ENNS / JNNS Membership Application Form

Volume 16, Number 2 March 2003

CONTENTS

Neural Networks Letter

A. I. Hanna, D. P. Mandic 155 A complex-valued nonlinear neural adaptive filter with a gradient adaptive amplitude of the activation function

Neuroscience and Neuropsychology

S. M. Stringer, E. T. Rolls, T. P. Trappenberg, I. E. T. de Araujo 161 Self-organizing continuous attractor networks and motor function

Mathematical and Computational Analysis

H. N. Mhaskar, F. J. Narcowich, J. D. Ward 183 Zonal function network frames on the sphere

A. Fernández-Caballero, J. Mira, M. A. Fernández, A. E. Delgado 205 On motion detection through a multi-layer neural network architecture

C.-S. Leung, L.-W. Chan 223 Dual extended Kalman filtering in recurrent neural networks

J. A. Pérez-Ortiz, F. A. Gers, D. Eck, J. Schmidhuber 241 Kalman filters improve LSTM network performance in problems unsolvable by traditional recurrent nets

Y. Becerikli, A. F. Konar, T. Samad 251 Intelligent optimal control with dynamic neural networks

B. Bakker, T. Heskes 261 Clustering ensembles of neural network models

Engineering and Design

X. P. Cheng, R. V. Patel — 271 — Neural network based tracking control of a flexible macro–micro manipulator system

Book review

G. R. Bradski — 287 — Graphical Models: Foundations of Neural Computation: Eds. Michael I Jordan and Terrence J Sejnowski, ISBN: 0-262-60042-0, Publisher: The MIT Press, Date: 2001, Price: $32.95

291 *Current Events*

I INNS / ENNS / JNNS Membership Application Form

Volume 16, Numbers 3–4 April–May 2003

CONTENTS

2003 Special Issue: Neural Networks for Analysis of Complex Scientific Data: Astronomy and Geosciences

Introduction

R. Tagliaferri, G. Longo, B. D'Argenio, A. Incoronato — 295 — Introduction: Neural networks for analysis of complex scientific data: astronomy and geosciences

R. Tagliaferri, G. Longo, L. Milano, F. Acernese, F. Barone, A. Ciaramella, R. De Rosa, C. Donalek, A. Eleuteri, G. Raiconi, S. Sessa, A. Staiano, A. Volpicelli — 297 — Neural networks in astronomy

V. M. Krasnopolsky, H. Schiller — 321 — Some neural network applications in environmental sciences. Part I: forward and inverse problems in geophysical remote measurements

V. M. Krasnopolsky, F. Chevallier — 335 — Some neural network applications in environmental sciences. Part II: advancing computational efficiency of environmental numerical models

H. Hidalgo, S. S. León, E. Gómez-Treviño — 349 — Application of the kernel method to the inverse geosounding problem

H. Socas-Navarro — 355 — Measuring solar magnetic fields with artificial neural networks

D. Mancini, M. Brescia, P. Schipani — 365 — Ground-based telescope pointing and tracking optimization using a neural controller

D. Baratta, G. Cicioni, F. Masulli, L. Studer — 375 — Application of an ensemble technique based on singular spectrum analysis to daily rainfall forecasting

T. Villmann, E. Merényi, B. Hammer — 389 — Neural maps in remote sensing image analysis

E. García-Berro, S. Torres, J. Isern — 405 — Using self-organizing maps to identify potential halo white dwarfs

J. Núñez, J. Llacer — 411 — Astronomical image segmentation by self-organizing neural networks and wavelets

R. J. Bullen, D. Cornford, I. T. Nabney — 419 — Outlier detection in scatterometer data: neural network approaches

G. Acciani, E. Chiarantoni, G. Fornarelli, S. Vergura	**427**	A feature extraction unsupervised neural network for an environmental data set
Z.-Y. Liu, K.-C. Chiu, L. Xu	**437**	Improved system for object detection and star/galaxy classification via local subspace analysis
S. Fiori	**453**	Overview of independent component analysis technique with an application to synthetic aperture radar (SAR) imagery processing
M. Funaro, E. Oja, H. Valpola	**469**	Independent component analysis for artefact separation in astrophysical images
E. E. Kuruoğlu, L. Bedini, M. T. Paratore, E. Salerno, A. Tonazzini	**479**	Source separation in astrophysical maps using independent factor analysis
F. C. Morabito, M. Versaci	**493**	Fuzzy neural identification and forecasting techniques to process experimental urban air pollution data
E. Cantú-Paz, C. Kamath	**507**	Evolving neural networks to identify bent-double galaxies in the FIRST survey
	I	INNS / ENNS / JNNS Membership Application Form

Volume 16, Numbers 5–6 June–July 2003

CONTENTS

2003 Special Issue: Advances in Neural Networks Research – IJCNN'03

		Editorial
D. C. Wunsch II, M. Hasselmo, D. Wang, G. K. Venayagamoorthy	**519**	Welcome to the special issue: the best of the best
		Perceptual and Motor Function
A. Ulloa, D. Bullock, B. J. Rhodes	**521**	Adaptive force generation for precision-grip lifting by a spectral timing model of the cerebellum
D. Casasent, X.-w. Chen	**529**	Radial basis function neural networks for nonlinear Fisher discrimination and Neyman–Pearson classification
X. Liu, A. Srivastava, D. Wang	**537**	Intrinsic generalization analysis of low dimensional representations
M. Han, L. Cheng, H. Meng	**547**	Application of four-layer neural network on information extraction
M. Matsugu, K. Mori, Y. Mitari, Y. Kaneda	**555**	Subject independent facial expression recognition with robust face detection using a convolutional neural network
G. Arulampalam, A. Bouzerdoum	**561**	A generalized feedforward neural network architecture for classification and regression
		Cognitive Function and Computational Neuroscience
H. Voicu	**569**	Hierarchical cognitive maps
R. A. Koene, A. Gorchetchnikov, R. C. Cannon, M. E. Hasselmo	**577**	Modeling goal-directed spatial navigation in the rat based on physiological data from the hippocampal formation
H. H. Namarvar, T. W. Berger	**585**	An efficient training algorithm for dynamic synapse neural networks using trust region methods

C. Günay, A. S. Maida	**593**	Temporal binding as an inducer for connectionist recruitment learning over delayed lines
R. A. Santiago, J. McNames, K. Burchiel, G. G. Lendaris	**601**	Developments in understanding neuronal spike trains and functional specializations in brain regions
L. Zhang, J. Mei	**609**	Shaping up simple cell's receptive field of animal vision by ICA and its application in navigation system
T. P. Caudell, Y. Xiao, M. J. Healy	**617**	eLoom and Flatland: specification, simulation and visualization engines for the study of arbitrary hierarchical neural architectures
P. Sussner	**625**	Associative morphological memories based on variations of the kernel and dual kernel methods
		Informatics
H. Ressom, D. Wang, P. Natarajan	**633**	Adaptive double self-organizing maps for clustering gene expression profiles
C. Furlanello, M. Serafini, S. Merler, G. Jurman	**641**	An accelerated procedure for recursive feature ranking on microarray data
		Dynamics
A. Gutierrez-Galvez, R. Gutierrez-Osuna	**649**	Pattern completion through phase coding in population neurodynamics
G. A. Ascoli	**657**	Passive dendritic integration heavily affects spiking dynamics of recurrent networks
A. M. Abdelbar, E. A. M. Andrews, D. C. Wunsch II	**665**	Abductive reasoning with recurrent neural networks
E. Del-Moral-Hernandez	**675**	Neural networks with chaotic recursive nodes: techniques for the design of associative memories, contrast with Hopfield architectures, and extensions for time-dependent inputs
L. A. Feldkamp, D. V. Prokhorov, T. M. Feldkamp	**683**	Simple and conditioned adaptive behavior from Kalman filter trained recurrent networks
		Reinforcement Learning and Control
S. Wermter, M. Elshaw	**691**	Learning robot actions based on self-organising language memory
A. Joshi, J. Weng	**701**	Autonomous mental development in high dimensional context and action spaces
E. N. Sanchez, L. J. Ricalde	**711**	Chaos control and synchronization, with input saturation, via recurrent neural networks
R. Padhi, S. N. Balakrishnan	**719**	Proper orthogonal decomposition based optimal neurocontrol synthesis of a chemical reactor process using approximate dynamic programming
L. Jianyu, L. Siwei, Q. Yingjian, H. Yaping	**729**	Numerical solution of elliptic partial differential equation using radial basis function neural networks
		Theory
B. Widrow, M. Kamenetsky	**735**	Statistical efficiency of adaptive algorithms
E. Mizutani, J. W. Demmel	**745**	On structure-exploiting trust-region regularized nonlinear least squares algorithms for neural-network learning

B. Kosko, S. Mitaim	**755**	Stochastic resonance in noisy threshold neurons
D. Anguita, S. Ridella, F. Rivieccio, R. Zunino	**763**	Quantum optimization for training support vector machines
L. Massey	**771**	On the quality of ART1 text clustering
M. H. Wang, C. P. Hung	**779**	Extension neural network and its applications
D. Tsujinishi, S. Abe	**785**	Fuzzy least squares support vector machines for multiclass problems
J. A. Bullinaria	**793**	Evolving efficient learning algorithms for binary mappings
A. Pezeshki, M. R. Azimi-Sadjadi, L. L. Scharf	**801**	A network for recursive extraction of canonical coordinates
A. Ghodsi, D. Schuurmans	**809**	Automatic basis selection techniques for RBF networks
L. Xu	**817**	Data smoothing regularization, multi-sets-learning, and problem solving strategies
S. A. Mulder, D. C. Wunsch II	**827**	Million city traveling salesman problem solution by divide and conquer clustering with adaptive resonance neural networks
		Applications
A. Zaknich	**833**	A practical sub-space adaptive filter
A. E. Gaweda, A. A. Jacobs, M. E. Brier, J. M. Zurada	**841**	Pharmacodynamic population analysis in chronic renal failure using artificial neural networks—a comparative study
R. Dutta, K. R. Kashwan, M. Bhuyan, E. L. Hines, J. W. Gardner	**847**	Electronic nose based tea quality standardization
A. Eleuteri, R. Tagliaferri, L. Milano, S. De Placido, M. De Laurentiis	**855**	A novel neural network-based survival analysis model
S.-P. Kim, J. C. Sanchez, D. Erdogmus, Y. N. Rao, J. Wessberg, J. C. Principe, M. Nicolelis	**865**	Divide-and-conquer approach for brain machine interfaces: nonlinear mixture of competitive linear models
Y. N. Rao, D. Erdogmus, G. Y. Rao, J. C. Principe	**873**	Stochastic error whitening algorithm for linear filter estimation with noisy data
J.-W. Park, R. G. Harley, G. K. Venayagamoorthy	**881**	New internal optimal neurocontrol for a series FACTS device in a power transmission line
W. Liu, G. K. Venayagamoorthy, D. C. Wunsch II	**891**	Design of an adaptive neural network based power system stabilizer
D. A. Karras, V. Zorkadis	**899**	On neural network techniques in the secure management of communication systems through improving and quality assessing pseudorandom stream generators
H. Szu, S. Noel, S.-B. Yim, J. Willey, J. Landa	**907**	Multimedia authenticity protection with ICA watermarking and digital bacteria vaccination

Visual Cortex: How Illusions Represent Reality

P. J. Kellman 915 Interpolation processes in the visual perception of objects

S. Grossberg 925 Laminar cortical dynamics of visual form perception

S. Anstis 933 Moving objects appear to slow down at low contrasts

E. Mingolla 939 Neural models of motion integration and segmentation

I INNS / ENNS / JNNS Membership Application Form

Volume 16, Number 7 September 2003

CONTENTS

Neural Networks Letter

M. Nomura, T. Aoyagi, M. Okada 947 Two-level hierarchy with sparsely and temporally coded patterns and its possible functional role in information processing

Neuroscience and Neuropsychology

S. K. Chalup, A. D. Blair 955 Incremental training of first order recurrent neural networks to predict a context-sensitive language

F. G. Ashby, M. B. Casale 973 A model of dopamine modulated cortical activation

Mathematical and Computational Analysis

K. Samejima, K. Doya, M. Kawato 985 Inter-module credit assignment in modular reinforcement learning

Z. Zhang, X. Ma, Y. Yang 995 Bounds on the number of hidden neurons in three-layer binary neural networks

A. Alexandridis, H. Sarimveis, G. Bafas 1003 A new algorithm for online structure and parameter adaptation of RBF networks

Y. Liao, S.-C. Fang, H. L. W. Nuttle 1019 Relaxed conditions for radial-basis function networks to be universal approximators

K. Yamazaki, S. Watanabe 1029 Singularities in mixture models and upper bounds of stochastic complexity

E. Parrado-Hernández, E. Gómez-Sánchez, Y. A. Dimitriadis 1039 Study of distributed learning as a solution to category proliferation in Fuzzy ARTMAP based neural systems

Technology and Applications

B.-L. Lu, K. Ito 1059 Converting general nonlinear programming problems into separable programming problems with feedforward neural networks

O. Parsons, G. A. Carpenter 1075 ARTMAP neural networks for information fusion and data mining: map production and target recognition methodologies

1091 *Current Events*

I INNS / ENNS / JNNS Membership Application Form

Volume 16, Number 8 October 2003

CONTENTS

Neural Networks Letters

S. L. Goh, D. P. Mandic 1095 Recurrent neural networks with trainable amplitude of activation functions

T. Nitta 1101 Solving the XOR problem and the detection of symmetry using a single complex-valued neuron

Psychology and Cognitive Science

S. Grossberg, D. V. Repin 1107 A neural model of how the brain represents and compares multi-digit numbers: spatial and categorical processes

A. Ulloa, D. Bullock 1141 A neural network simulating human reach–grasp coordination by continuous updating of vector positioning commands

Neuroscience and Neuropsychology

A. R. Sargsyan, A. A. Melkonyan, C. Papatheodoropoulos, H. H. Mkrtchian, G. K. Kostopoulos 1161 A model synapse that incorporates the properties of short- and long-term synaptic plasticity

Mathematical and Computational Aanalysis

I. Tokuda, R. Tokunaga, K. Aihara 1179 Back-propagation learning of infinite-dimensional dynamical systems

G. He, Z. Cao, P. Zhu, H. Ogura 1195 Controlling chaos in a chaotic neural network

S. Fiori 1201 Neural independent component analysis by 'maximum-mismatch' learning principle

T. Chu, C. Zhang, Z. Zhang 1223 Necessary and sufficient condition for absolute stability of normal neural networks

Book review

F. Azuaje 1229 Artificial Immune Systems: A New Computational Intelligence Approach

1231 *Current Events*

I INNS/ENNS/JNNS—Membership Applicatin Form

Volume 16, Number 9 November 2003

CONTENTS

2003 Special Issue: Neuroinformatics

S.-i. Amari, M. A. Arbib, R. Kötter 1235 Introduction

M. Arbib, M. Bota 1237 Language evolution: neural homologies and neuroinformatics

R. Kötter, K. E. Stephan	**1261**	Network participation indices: characterizing component roles for information processing in neural networks
A. Gupta, B. Ludäscher, J. S. Grethe, M. E. Martone	**1277**	Towards a formalization of disease-specific ontologies for neuroinformatics
S. Usui	**1293**	Visiome: neuroinformatics research in vision project
K. Sato, Y. Taki, H. Fukuda, R. Kawashima	**1301**	Neuroanatomical database of normal Japanese brains
J. Anemüller, T. J. Sejnowski, S. Makeig	**1311**	Complex independent component analysis of frequency-domain electroencephalographic data
K. Friston	**1325**	Learning and inference in the brain
L. Schwabe, K. Obermayer	**1353**	Modeling the adaptive visual system: a survey of principled approaches
R. Mudra, R. J. Douglas	**1373**	Self-correction mechanism for path integration in a modular navigation system on the basis of an egocentric spatial map
S. Kikuchi, K. Fujimoto, N. Kitagawa, T. Fuchikawa, M. Abe, K. Oka, K. Takei, M. Tomita	**1389**	Kinetic simulation of signal transduction system in hippocampal long-term potentiation with dynamic modeling of protein phosphatase 2A
	I	INNS/ENNS/JNNS—Membership Application Form

Volume 16, Number 10 December 2003

CONTENTS

		Erratum
X. Liao, G. Chen, E. N. Sanchez	**1401**	Delay-dependent exponential stability analysis of delayed neural networks: an LMI approach
		Mathematical and Computational Analysis
W.-k. Fung, Y.-h. Liu	**1403**	Adaptive categorization of ART networks in robot behavior learning using game-theoretic formulation
P. Bofill, R. Guimerà, C. Torras	**1421**	Comparison of simulated annealing and mean field annealing as applied to the generation of block designs
D. R. Wilson, T. R. Martinez	**1429**	The general inefficiency of batch training for gradient descent learning
W. A. Truccolo, G. Rangarajan, Y. Chen, M. Ding	**1453**	Analyzing stability of equilibrium points in neural networks: a general approach
Q. Xiong, K. Hirasawa, J. Hu, J. Murata	**1461**	A functions localized neural network with branch gates
N. Ay, T. Wennekers	**1483**	Dynamical properties of strongly interacting Markov chains

Engineering and Design

E. M. Cochrane, J. E. Beasley **1499** The co-adaptive neural network approach to the Euclidean Travelling Salesman Problem

N. Y. Nikolaev, H. Iba **1527** Polynomial harmonic GMDH learning networks for time series modeling

1541 *Current events*

I Volume Contents 2003

XIII Author index 2003

XIV INNS/ENNS/JNNS—Membership Application Form